REMARKS/ARGUMENTS

Claims 1–60 were in the application as filed. Claims 31–46 and 48–50 were previously canceled without prejudice pursuant to a requirement for restriction, and claims 1, 2, 8, 47, and 56 were previously cancelled without prejudice. Claims 7, 51–55, 58–60, and 63–65 stand rejected. Claims 3–6, 9–30, 61, and 62 stand allowed. Claim 57 stands objected to as allegedly dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants express their appreciation to the Examiner for the early notification of allowable subject matter.

In this paper, claims 7, 52–55, and 63–65 have been amended.

The amendments made herein add no new matter. Any amendment to the claims which has been made in this Amendment and Response, and which has not been specifically noted to overcome a rejection based on prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to be attached thereto. Reconsideration and reexamination of the application is respectfully requested in view of the amendments and the following remarks.

Claim Rejections – 35 U.S.C. §103(a)

Claims 7, 51–55, 58–60, and 63–65 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent Application Publication No. 2002/0163586 of Noguchi. The rejection is traversed.

Noguchi '586 discloses an apparatus 1, such as a digital still image or video camera, having a charge coupled device (CCD) image transducer 14 for capturing an image. The apparatus 1 also has a light reception sensor 26 which provides information about brightness from a subject, and a sensitivity detecting section 28 which determines whether the sensitivity of the transducer 14 is sufficient. An infrared filter 12 is moved into or out of the optical path between the subject and the transducer 14 based upon an output from the sensitivity detecting section 28.

As illustrated in Figure 1 of Noguchi '586, the light reception sensor 26 and sensitivity detecting section 28 are electronically coupled in sequence into a color separating section 20 which is structurally and operationally "downstream" from the CCD image transducer 14. Neither the light reception sensor 26 nor the sensitivity detecting section 28 is directly coupled with the CCD image transducer 14.

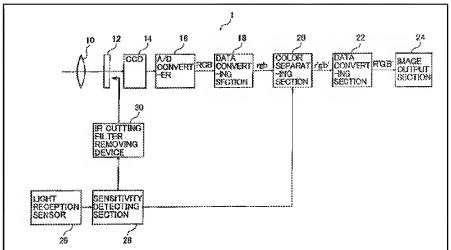

FIGURE 1 OF NOGUCHI '586

To establish a *prima facie* case of obviousness, several basic criteria must be met. Under *Graham v. John Deere, 383 U.S. 1; 86 S. Ct. 684; 15 L. Ed. 2d 545 (1966)*, it is necessary to 1) determine the scope and content of the prior art; 2) ascertain the differences between the prior art and the claims at issue; 3) resolve the level of ordinary skill in the pertinent art; and 4) evaluate evidence of secondary consideration. Additionally, the obviousness evaluation will be informed by a showing of teaching, suggestion, or motivation that would lead a person of ordinary skill in the art to combine the prior art to meet the claimed subject matter, although a rigid application of this showing is not required. The obviousness analysis must be explicit, and it is necessary to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art elements in the manner claimed. *KSR Int'l Co. v. Teleflex, Inc., 550 U.S. __; 127 S. Ct 1727; 82 U.S.P.Q.2d (BNA) 1385 (2007).* Secondary considerations, such as commercial success, long felt but unsolved needs, failure of others, etc., may be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. *Graham, supra, 383 U.S. at 17-18.*

In contrast to Noguchi '586, claim 63 has been amended and, in pertinent part, calls for an image sensor generating a light level output that is indicative of light intensity in the vicinity of the camera, as well as an image output representative of an image captured by the image sensor. In other words, the image sensor serves as both a device for capturing an image and a device for indicating light intensity. Claim 65 has also been amended and includes virtually identical limitations — limitations not disclosed in Noguchi '586.

These limitations are supported by Applicants' disclosure: "For example, the IR filter can be moved in response to an image sensor output that is indicative of the lighting conditions in the image sensor environment...." *Application, ¶[0042]*. Moreover, in Applicants' system, a microprocessor employs an algorithm that utilizes an output from the image sensor to determine when the IR filter should be repositioned:

> The output of the camera 36' that is used by the algorithm is indicative of the light conditions in the vicinity of the camera module 60'. The output can be a numerical value or an ordinal indicator, a direct output of the image sensor 80', or an output that has been manipulated or produced by a processor or similar device in communication with the image sensor 80'. *Application, ¶[0062]*.

Applicants' system is not disclosed by Noguchi '586.

The Assertion of Official Notice is Improper

The Office action concedes that Noguchi '586 does not disclose an image sensor generating an output indicative of light intensity or lighting conditions. *Office action, p. 3, ln. 16-17*. However, the Office action asserts relative to claims 63 and 65 that

> Official Notice is taken that it was well known at the time the invention was made to use image signals to determine the type of lighting conditions. This is advantageous in that feedback can be provided on the image sensor output to adjust the image adjustment settings (white balance, gain, gamma) of the camera to more accurately capture images. For this reason it would have been obvious to

one of ordinary skill in the art at the time the invention was made to have Noguchi include the image sensor output being used for the lighting conditions." *Office action, pp. 3-4.*

This assertion is inadequate to support the rejection.

According to section 2144.03 of the MPEP,

Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. The notice of facts beyond the record which may be taken by the examiner must be **capable of such instant and unquestionable demonstration as to defy dispute.** Official notice of facts as old and well known expedients in the art might be taken relative to a dependent claim without the support of documentary evidence **provided the facts so noticed are of notorious character and serve only to "fill in the gaps" which might exist in the evidentiary showing made by the examiner to support a particular ground of rejection.**

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well-known are not capable of instant and unquestionable demonstration as being well-known. Assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. The Federal Circuit rejects judicial or administrative notice of the state of the art, since the facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice. Moreover, while the PTO, as an administrative agency, has expertise in the subject matter over which it exercises jurisdiction, such expertise

> may provide sufficient support for conclusions only as to peripheral issues. An assessment of basic knowledge and common sense that is not based on any evidence in the record **lacks substantial evidence support**, and consequently does not comply with the Administrative Procedures Act.
>
> If such notice is taken, **the basis for such reasoning must be set forth explicitly**. The examiner must provide **specific factual findings predicated on sound technical and scientific reasoning** to support his or her conclusion of common knowledge. The applicant should be presented with the explicit basis on which the examiner regards the matter as subject to official notice so as to adequately traverse the rejection in the next reply after the Office action in which the common knowledge statement was made. (*Citations omitted; emphasis added.*)

The Office action cannot properly rely on official notice. The Office action concludes only that, at the time the invention was made, it was well known to use image signals to determine the type of lighting conditions. However, there is no factual evidence or any technical or scientific reasoning to support this conclusion. It cannot reasonably be disputed that the above conclusory statement is an assertion of technical facts in an area of esoteric technology. Yet the statement is unsupported by any citation to any reference work recognized as standard in the pertinent art.

As a matter of technical facts in an area of esoteric technology, the use of image sensor signals to determine lighting conditions is not capable of instant and unquestionable demonstration as being well-known. Moreover, the cited as prior art references do not support the assertion that, at the time of Applicants' invention, an output signal from an image sensor was used to determine lighting conditions or intensity. The asserted official notice satisfies none of the requirements of MPEP §2144.03.

The Reference to White Balance, Gain, and Gamma does not Support Official Notice

The argument that using image signals to determine the type of lighting conditions "is advantageous in that feedback can be provided on the image sensor output to adjust the image adjustment settings (white balance, gain, gamma) of the camera to more accurately capture images" does not remedy the above deficiencies. This assertion is ambiguous, unsupported by any facts, and nothing more than an expedient to overcome the absence of any other support for the rejection.

In effect, the Office action asserts that feedback can be used to adjust the image adjustment settings to more accurately capture images. The image adjustment settings are identified as white balance, gain, and "gamma." However, Applicants' system utilizes output from the image sensor to control the placement of an IR filter in order to compensate for the effects of high and low lighting conditions in order to improve image quality. The asserted advantage is nothing more than an after-the-fact rationale based solely on Applicants' disclosure.

White Balance

Furthermore, the reference to white balance, gain, and gamma is misplaced. "White balance" is related to the concept of color temperature. Color temperature is related to the amount of blue light and the amount of red light associated with a light source. A light with higher color temperature has more blue light. A light with lower color temperature has more red light. In digital cameras, sensors can measure the current color temperature associated with an image, and utilize an algorithm to process the image, so that the final result is faithful to the actual subject. However, the algorithm may not be accurate in all circumstances.

In some situations, when the algorithm is unable to correctly set color temperature, the camera can be "instructed" to use a particular color temperature. The adjustment that ensures the white color of the subject will be accurately reproduced in the image is referred to as "white balance." A white balance control can be used to accurately set the white of the image captured by the camera to the white associated with the subject. Setting the white balance correctly

results in the remaining colors of the subject being accurately reproduced in the image. In other words, white balance is associated with color accuracy, not with high or low lighting levels.

Gain

"Gain" is an increase in signal power or voltage produced by an amplifier relative to the amplifier input power or voltage. As discussed in Applicants' disclosure, gain is applied to pixel output to increase pixel brightness in order to improve image quality. Gain is proportional to light conditions. Thus, when light conditions are low, gain is increased; when light conditions are high, gain is decreased. Gain is used as a convenient parameter to determine whether or not the IR filter should be positioned in the optical path.

Applicants' inventive concept has little to do with gain. Applicants' system compares lighting levels associated with a photographic subject with the light sensitivity of an image sensor to adjust the level of, i.e. to filter, ambient light associated with the subject. Gain is used to indirectly determine the lighting level. A high gain means low light; a low gain means bright light. Unamplified sensor output values could be utilized for the same purpose.

Applicants' system is addressed to whether light conditions are such as to require the use of an IR filter or not. Gain *per se* is not the essence of Applicants' system. Thus, whether the output from an image sensor might have been used to adjust gain to more accurately capture images is not the issue. The issue is whether the output from an image sensor was utilized at the time of Applicants' invention to control an IR filter. It was not.

Gamma

"Gamma" also has nothing to do with the asserted advantages of using image signals to determine lighting conditions. Digital image sensors (both CCD and CMOS) are linear. Specifically, the voltage generated in each sensor pixel, and hence the pixel level emerging from an associated A/D converter, is proportional to exposure, i.e. to the light energy reaching the pixel. However, neither human vision nor CRT monitors are linear. Hence the "color spaces", i.e. the rules that correlate pixel levels to visible colors, used for standard image files are

intentionally nonlinear. Furthermore, the luminance represented by a pixel is not proportional to the pixel level. Rather, luminance in a photographic print or monitor is related to pixel level by the following simplified equation:

$$\text{Output luminance} = (\text{Pixel level})^{\text{gamma}}.$$

"Gamma" is the exponent of the equation that relates luminance to pixel level. Every "color space" has a characteristic gamma. Different values of "gamma" are associated with different color spaces, different operating systems, and different image processing software. "Gamma" is typically associated with the viewing of an image on a monitor.

"Gamma" can be analogized to contrast. The human eye responds to relative luminance differences, but in a non-linear way. For this reason, the relationships between exposure, pixel level, and luminance are displayed logarithmically as straight lines. The slope of one such line is "gamma," e.g. the change in pixel level for a given change in exposure. In other words, "gamma" is contrast.

The image sensor in a digital camera is basically a linear device, i.e. doubling the exposure doubles the output signal. When inputting a linear digital signal into a computer, however, the display on screen is non-linear, and images tend to be darker. The input signal to the monitor is electronically adjusted to boost dark areas and reduce light ones. This process is known as "gamma correction" and it ensures that camera and monitor working together produce a linear effect.

In order to obtain an authentic reproduction of an image, the gamma setting of a monitor can be adjusted with software, and is the easiest way to control the digital camera gamma settings. The gamma function controls the general brightness or luminance and the contrast curve. This control enables an operator to set the characteristic curve of the camera, or the manner in which the camera reproduces various tones along the black-to-white scale.

It is unclear whether the office action reference to "gamma," is a reference to camera gamma or monitor gamma. Nevertheless, gamma is associated with correction all of pixel output

and exposure in order to provide any invasion that is accurate in terms of contrast and brightness. Applicant's invention is not concerned with correcting an output signal from an image sensor in order to produce an image that is an accurate reproduction of the photographic subject. Applicant's invention is concerned with determining whether a lighting condition is above or below a threshold level for the purpose of determining whether or not a filter should be positioned in the optical path.

Whether, at the time of Applicants' invention, feedback from an image sensor output was used to adjust white balance, gain, or gamma settings in order to more accurately capture images, none of these settings provides the lighting control of Applicants' invention. The asserted rationale does not support official notice.

Because the asserted official notice is improper, it cannot be properly combined with Noguchi '586. The rejection of claims 63 and 65 cannot be sustained over Noguchi '586 alone. Claims 63 and 65 are patentable.

Claim 7 depends from claim 63 and, for the same reasons, is patentable over Noguchi '586. Furthermore, claim 7 additionally calls for the infrared filter to be in a first position when the light level output is less than a first threshold, and in a second position when the light level output is greater than a second threshold. This limitation is not disclosed in Noguchi '586. Thus, claim 7 is independently patentable.

Claim 64 depends from claim 63 and, for the same reasons, is patentable over Noguchi '586. Claims 51-55 depend from claim 65 and, for the same reasons, are patentable over Noguchi '586. Claims 58-60 depend from claim 51, and ultimately claim 65, and, for the same reasons, are patentable over Noguchi '586.

For all the above reasons, claims 7, 51-55, 58-60, and 63-65 are patentable over the prior art of record. Applicants request withdrawal of the rejection and the allowance of claims 7, 51-55, 58-60, and 63-65.

CONCLUSION

For the reasons discussed above, all claims remaining in the application are allowable over the prior art. Notification of allowability is requested. If there are any remaining issues which the Examiner believes may be resolved in an interview, the Examiner is invited to contact the undersigned.

Respectfully submitted,
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